

Claims

- [c1] A method of manufacturing an internal filter, comprising:
- providing a first substrate;
 - providing a second substrate;
 - forming a plurality of first passages in the first substrate;
 - forming a plurality of second passages in the first substrate;
 - forming a plurality of third passages in one of the first substrate and the second substrate; and
 - placing the first and second substrates adjacent to each other, such that the plurality of third passages extend between the first and second passages and fluidly connect the first and second passages such that particles having a size greater than that which can pass through the third passages are filtered from the fluid when the fluid flows through the first passages, into and through the third passages, and into the second passages.
- [c2] The method of claim 1, wherein forming the first and second passages comprises forming the first and second

passages using at least one of an orientation-dependent etching technique, a non orientation-dependent etching technique, and a reactive ion etching technique.

[c3] The method of claim 2, wherein forming the third passages comprises forming the third passages using at least one of an orientation-dependent etching technique, a non orientation-dependent etching technique, and a reactive ion etching technique.

[c4] The method of claim 1, wherein:
forming the first and second passages in the first substrate comprises forming at least some of the first and second passages such that those ones of the first and second passages extend completely through the first substrate.

[c5] The method of claim 4, further comprising placing a third substrate adjacent to an outer surface of the first substrate.

[c6] The method of claim 4, wherein forming the plurality of third passages comprises forming the plurality of third passages in the second substrate.

[c7] The method of claim 6, wherein forming the plurality of third passages in the second substrate comprises forming at least some of the third passages such that those

ones of the third passages extend completely through the second substrate.

[c8] The method of claim 7, further comprising placing a third substrate adjacent to an outer surface of the second substrate.

[c9] A method of manufacturing a solid-state fluid filter, comprising:

- providing a first substrate;
- providing a second substrate;
- partially forming a plurality of first and second passages in the first substrate;
- completing the forming of the plurality of first and second passages in the first substrate while forming a plurality of third passages in the first substrate, such that the plurality of third passages extend between the first and second passages and fluidly connect the first and second passages; and
- placing the first and second substrates adjacent to each other.

[c10] The method of claim 9, wherein:

- partially forming the first and second passages comprises forming the first and second passages using an orientation-dependent etching technique; and
- completing the forming of the first and second pas-

sages while forming the third passages comprises completing the forming of the first and second passages while forming the third passages using an orientation-dependent etching technique.

[c11] The method of claim 9, wherein:

partially forming the first and second passages comprises forming the first and second passages using a non orientation-dependent etching technique; and completing the forming of the first and second passages while forming the third passages comprises completing the forming of the first and second passages while forming the third passages using a non orientation-dependent etching technique.

[c12] The method of claim 9, wherein:

partially forming the first and second passages comprises forming the first and second passages using a reactive ion etching technique; and completing the forming of the first and second passages while forming the third passages comprises completing the forming of the first and second passages while forming the third passages using a reactive ion etching technique.

[c13] A method of manufacturing an internal filter, comprising:

providing a first substrate;
providing a second substrate;
forming a plurality of first passages in a third substrate;
forming a plurality of second passages in the third substrate;
forming a plurality of third passages in a fourth substrate; and
placing the third and fourth substrates between the first and second substrates, such that the plurality of third passages extend between the first and second passages and fluidly connect the first and second passages.

[c14] The method of claim 13, wherein placing the third and fourth substrates between the first and second substrates comprises placing the third substrate on the first substrate before the first and second passages are formed.

[c15] The method of claim 14, wherein placing the third and fourth substrates between the first and second substrates comprises placing the fourth substrate on the third substrate before the third passages are formed.

[c16] The method of claim 13, wherein placing the third and fourth substrates between the first and second sub-

strates comprises placing the fourth substrate on the second substrate before the third passages are formed.

[c17] The method of claim 13, wherein the first and second passages are formed in the third substrate before the third substrate is placed between the first and second substrates.

[c18] The method of claim 13, wherein the third passages are formed in the fourth substrate before the fourth substrate is placed between the first and second substrates.

[c19] A method of manufacturing an internal filter, comprising:

- providing a first substrate;

- providing a second substrate;

- forming a plurality of first passages in the first substrate;

- forming a plurality of second passages in one of the first substrate and the second substrate;

- forming a plurality of third passages in a third substrate; and

- placing the first, second and third substrates adjacent to each other, such that the third substrate is between the first and second substrates and the plurality of third passages extend between the first and second passages and fluidly connect the first and

second passages.